

## REMARKS

In response to the Office Action dated January 18, 2006, claims 36, 40, and 45-53 have amended. No new matter has been added. Reexamination and reconsideration of the claims as requested is respectfully requested.

On page 3 of the Office Action, claims 45-48, 50 and 53 are rejected under 35 U.S.C. § 112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which is regarded as the invention. The Applicants respectfully traverse this rejection, but have amended the application to overcome the objections. It is believed that all claims comply with 35 U.S.C. § 112.

On page 3 of the Office Action, claims 36, 40-43, 45, 46 and 49-51 are rejected under 35 U.S.C. §102 (b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Shibuta (U.S. 5,853,877). The Applicants respectfully traverse this rejection, but have amended the application to overcome the objections.

On page 5 of the Office Action, claims 37, 39, 44, 47, 48, 52, and 53 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shibuta as applied to claims 36, 40-43, 45, 46, and 49-51, and further in view of Stephan, et al. ("Doping Graphitic and Carbon Nanotube Structures with Boron and Nitrogen"). The Applicants respectfully traverse this rejection, but have amended the application to overcome the objections.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 36 as amended (similarly claim 40) calls for, *inter alia*:

***a substrate bearing chemically reactive groups; and***

at least one multiwall carbon nanotube, the at least one multiwall carbon nanotube having:

.....

wherein, ***due to the substantial oxidation*** of the outer wall, the at least one multi-wall carbon ***nanotube is bound covalently to the chemically reactive groups*** of the substrate.

(Emphasis added)

In the third paragraph on page 2 of the Advisory Action, the Examiner stated:

The applicant is directed to MPEP 2113 which clearly defines a 102/103 type rejection as a rejection used in situations where the product and/or process of the prior art is substantially similar but does not teach all of the limitations claimed. The burden is then shifted to the applicant to show a difference. The applicant has thus far failed to show such a difference, only arguing that the motivation, problem being solved, or intended use is different, and such differences do not, per se, provide patentability.

MPEP 2113 is titled "Product-By-Process Claims", and is concerned ***exclusively*** with product-by-process claim features. None of the above-noted claim features are product-by-process features. Therefore, MPEP 2113 is neither applicable nor relevant.

Furthermore, Applicant did ***not*** make any arguments "arguing that the motivation, problem being solved, or intended use is different."

In the third paragraph on page 2 of the Advisory Action, the Examiner stated:

As referenced, Shibuta teaches polyesters as substrates, which, by definition, contain chemically reactive groups.

The Examiner is correct that polyesters contain chemically reactive groups in the form of polymer chains. However, these chemically reactive polymer chains bind other polymer chains (see [http://en.wikipedia.org/wiki/Polymer#Intermolecular\\_forces](http://en.wikipedia.org/wiki/Polymer#Intermolecular_forces)). Because of the strong bounds between polymer chains, polyester is a fairly chemically inert material, not binding easily with other material.

As stated in the last response, co. 6, lines 26-33, of *Shibuta* states:

An electrically conductive transparent carbon microfibers aggregation film on the substrate is formed. ....The type of a substrate can be **generally transparent materials** such as the film or the sheet of glass or transparent plastic (e.g. polyesters, polycarbonate, acrylic resins, etc.) and moreover occasionally untransparent materials suitable for applications.

Hollow carbon microfibers treated with the present method have **self-cohesiveness** and **combine with one another** at the contact point between microfibers after drying .... Therefore, according to the present invention, a perfect **carbon** microfibers alone can be obtained.....

(Emphasis added)

Nowhere does the very detailed description in *Shibuta* disclose or suggest the bonding of the microfibers to the substrate, or coating the substrate with chemically reactive groups or using a substrate having chemically reactive groups. The only selection criterion stated in *Shibuta* for the substrate is that it is a transparent material.

In the third paragraph on page 2 of the Advisory Action, the Examiner stated:

There is no reason to believe that the oxidized nanotubes of Shibuta would not covalently bond to the substrates disclosed by Shibuta.

On the other hand, as discussed above, there is **no** evidence in *Shibuta* suggesting that the nanotubes will covalently bond to the substrate.

The legal standard for establishing a *prima facie* case of obviousness (or anticipation) is "preponderance of evidence". As stated in MPEP § 716.01(d) and § 2142, in order for a rejection or maintenance of a rejection over the prior art, the evidence for lack of patentability must be **more** convincing than the evidence for patentability, i.e. more probable than not.

Looking at the disclosure of *Shibuta*, Applicant believes that the lack of any evidence in *Shibuta* for suggesting covalent binding of the microfibers to the substrate should tilt the balance toward patentability.

Consequently, the invention as recited in claims 36 and 40 of the instant application is believed not to be anticipated by or obvious over *Shibuta*. Because claims 37-39 are ultimately dependent on claim 36 and claims 41-53 are ultimately dependent on claim 40, they are believed to be patentable as well.

Considering the deficiencies of the primary reference *Shibuta*, it is believed not to be necessary at this stage to address the secondary references applied in the rejection of certain dependent claims, and whether or not there is sufficient suggestion or motivation with a reasonable expectation of success for modifying or combining the references as required by MPEP § 2143.

In view of the foregoing, reconsideration and allowance of claims 36-53 are solicited.

### **CONCLUSION**

In view of the amendments and reasons provided above, it is believed that all pending claims are in condition for allowance. The amendments clarify the patentable invention without adding new subject matter. Applicant respectfully requests favorable reconsideration and early allowance of all pending claims.

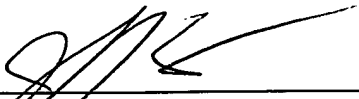
If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicant's attorney of record, Jeffrey R. Stone at 952 253-4130.

Respectfully submitted,

Altera Law Group, LLC  
Customer No. 22865

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By:

  
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Jeffrey R. Stone  
Reg. No. 47,976  
JRS/mej